

1. Report No. DOT/FAA-ACS-88-1(29)	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security		5. Report Date May 1989	
		6. Performing Organization Code May 1989	
7. Author(s) Program Analysis Officer, ACS-3		8. Performing Organization Report No.	
9. Performing Organization Name and Address DOT/Federal Aviation Administration Office of Civil Aviation Security 800 Independence Avenue, S.W. Washington, D.C. 20591		10. Work Unit No. (TRAIS)	
		11. Contract Grant No.	
12. Sponsoring Agency Name and Address DOT/Federal Aviation Administration Office of Civil Aviation Security 800 Independence Avenue, S.W. Washington, D.C. 20591		13. Type of Report and Period Covered Recurring Report July 1 - December 30, 1988	
		14. Sponsoring Agency Code	
15. Supplementary Notes This report is required by Section 325(a) of the Federal Aviation Act of 1958.			
16. Abstract  The report includes an analysis of the current threat against civil aviation along with information regarding hijacking attempts, security incidents, bomb threats, and passenger screening activity. It also summarizes ongoing activities to assure adequate protection of civil air commerce against hijacking/sabotage and related crimes, and other aspects of the Civil Aviation Security Program.  <i>Security Monitoring Publications, Periodicals, Reports (EG)</i>			
17. Key Words		18. Distribution Statement This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 41	22. Price



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of the Administrator

800 Independence Ave. S.W.  
Washington, D.C. 20591

NOV 3 1989

The Honorable Dan Quayle  
President of the Senate  
Washington, DC 20510

Dear Mr. President:

This is the Federal Aviation Administration's (FAA) Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program. It covers the period July 1, 1988, through December 31, 1988, and is submitted in accordance with Section 315(a) of the Federal Aviation Act of 1958, as amended.

During this reporting period, Federal Air Marshal teams flew over 7,200,000 nautical miles while assigned to U.S. air carriers on selected flights in especially sensitive or threatened areas throughout the world. Also, civil aviation security special agents conducted 45 assessments of foreign airports, pursuant to the International Security and Development Cooperation Act of 1985.

On December 21, 1988, an explosion occurred on Pan American World Airways (Pan Am) Flight 103 which resulted in the deaths of 259 persons aboard the aircraft and 11 persons on the ground in the village of Lockerbie, Scotland. Evidence clearly indicates that the aircraft was destroyed by a criminal act in which a high explosive device detonated within a baggage container in the forward baggage hold of the aircraft.

The tragic loss of Pan Am Flight 103 revealed that heightened measures are necessary to counteract the increasing sophistication of terrorist capabilities. Immediately after the loss of Pan Am Flight 103, the FAA ordered significant tightening of U.S. air carrier security requirements at airports in Western Europe and the Middle East. The following actions were mandated by the FAA:

- o 100 percent x-ray or physical inspection of all checked baggage;
- o prohibiting passenger access to checked baggage after security inspection;
- o positive matching of all passengers and checked baggage; and
- o x-ray or physical examination of small packages or parcels shipped through passenger counters.

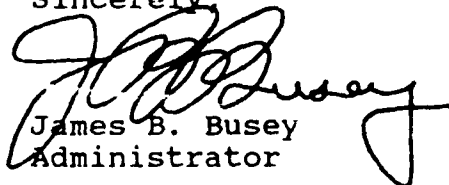
Following these measures, an in-depth review of circumstances surrounding Pan Am Flight 103 was conducted by representatives of the Office of the Secretary of Transportation in coordination with FAA. As a result, the Secretary announced a series of new initiatives to address the changing threat to aviation security. These initiatives include:

- o revisions to air carriers' security programs requiring the installation and use of explosive detection systems such as thermal neutron analysis units;
- o the immediate deployment of FAA security specialists to selected locations throughout Europe and the Middle East;
- o improved procedures for intelligence assessment and dissemination;
- o changes to air carriers' security programs to require state-of-the-art metal detection equipment; and
- o the proposed formation of an Aviation Security Advisory Committee, chaired by FAA's Director of Civil Aviation Security.

To realize the initiatives identified by the Secretary, the FAA has developed and is implementing an extensive program to improve security measures domestically and worldwide. This effort is the Civil Aviation Security Improvement Program (CASIP). CASIP is a broad-based program which integrates 22 separate initiatives all of which contribute to the enhanced and expanded performance of the civil aviation security system as a whole. In addition to the initiatives described by the Secretary, CASIP includes measures to improve the security program of foreign air carriers, the screening of electronic devices, the review of procedures for handling all mail and cargo and the increased effectiveness of international efforts through ICAO.

This report has also been sent to the Speaker of the House.

Sincerely,

  
James B. Busey  
Administrator

Enclosure



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of the Administrator

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Washington, D.C. 20591

**NOV 3 1989**

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Speaker of the House of  
Representatives  
Washington, DC 20515

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Published semiannually by the Office of  
Civil Aviation Security, Federal Aviation  
Administration, U.S. Department of  
Transportation. Additional copies may be  
obtained from the National Technical  
Information Service, U.S. Department of  
Commerce, 5285 Port Royal Road,  
Springfield, VA, USA 22161. Write or call  
NTIS for price quotation: 703-487-4650

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## I. EXECUTIVE HIGHLIGHTS

1. THIS REPORT COVERS THE PERIOD JULY 1, 1988 - DECEMBER 31, 1988.
2. PAN AM FLIGHT #103 ON A FLIGHT FROM FRANKFURT TO LONDON TO NEW YORK WAS DESTROYED IN MIDAIR BY AN EXPLOSIVE DEVICE. THERE WERE NO SURVIVORS.
3. OVER 523 MILLION PERSONS WERE PROCESSED THROUGH U.S. PASSENGER CHECKPOINTS. THERE WERE 1,482 FIREARMS AND 3 EXPLOSIVE/INCENDIARY DEVICES DETECTED WITH 814 RELATED ARRESTS.
4. WORLDWIDE, SIX HIJACKINGS OCCURRED AGAINST SCHEDULED AIR CARRIERS. TWO OF THESE WERE AGAINST U.S. AIRLINES.
5. A TOTAL OF 1,012 INVESTIGATIONS OF ALLEGED SECURITY VIOLATIONS BY AIR CARRIERS, AIRPORTS, AND INDIVIDUALS WERE COMPLETED.
6. CIVIL PENALTIES TOTALING \$279,010 WERE COLLECTED IN 356 INVESTIGATIONS.
7. THERE WERE 45 ASSESSMENTS COMPLETED OF THE EFFECTIVENESS OF SECURITY MEASURES IMPLEMENTED AT FOREIGN AIRPORTS.
8. FEDERAL AIR MARSHAL TEAMS FLEW 7,200,000 NAUTICAL MILES IN IDENTIFIED SENSITIVE AREAS OF THE WORLD.

## II. INTRODUCTION

This 29th Semiannual Report to Congress on the Effectiveness of the Civil Aviation Security Program is submitted pursuant to Section 315(a) of the Federal Aviation Act of 1958, as amended. This section requires that a semiannual report be submitted to the Congress concerning the effectiveness of air carrier passenger screening procedures. This report covers the period July 1, 1988 - December 31, 1988.

On December 21, 1988, an explosive device was detonated aboard Pan American World Airways Flight 103 en route from London to New York resulting in the deaths of all persons on board and 11 persons on the ground. This report details the operational and technological initiatives being taken to thwart the use of explosives in criminal acts against aviation.

The report presents a concise picture of the nationwide effectiveness of the procedures used to screen passengers and their carry-on items prior to boarding scheduled and public charter flights, as well as visitors desiring access to air terminal passenger boarding areas. Included in this report is a summary of the assessments conducted by the Federal Aviation Administration's (FAA) Office of Civil Aviation Security to determine the effectiveness of the security measures at foreign airports served by U.S. air carriers, foreign airports which pose a high risk to international air travel, and such other foreign airports as the Secretary of Transportation may deem appropriate. These assessments were conducted pursuant to the International Security and Development Cooperation Act of 1985 (Public Law 99-53) which amended section 1115 of the Federal Aviation Act of 1958, as amended.

In addition, this report includes a summary of the activities of the Federal Air Marshals (FAM) Program and the changes in security measures which were instituted during this reporting period to prevent or deter terrorist and other criminal acts against civil aviation. As special agents, FAM's continue to receive intensive basic and recurrent inservice training from the Federal Law Enforcement Training Center of the U.S. Department of the Treasury. This assures that these special agents maintain a high level of proficiency in the skills critical to performance of their highly specialized duties.

Additional information is included on the FAA's K-9 Explosives Detection Team and Aviation Explosives Security Programs, the Hazardous Materials Compliance and Enforcement Program, and the International Technical Assistance Program.

### III. AIRCRAFT HIJACKING INCIDENTS

The FAA issues operating certificates to U.S. citizens or corporations which are engaged in public charter and/or scheduled passenger air operations. A person or corporation engaged in such air operations is referred to as a "certificate holder." In the report, such certificate holders are referred to as air carriers in order to differentiate them and their aircraft from general aviation operators and aircraft.

Between July 1 and December 31, 1988, two U.S. scheduled air carriers were hijacked. American Airlines Flight 658 between Port-Au-Prince, Haiti, and New York, New York, was hijacked by three Haitian soldiers on October 1. Trans World Airlines Flight 469 between San Juan, Puerto Rico, and Miami, Florida, was hijacked by a lone male on December 11. No injuries occurred in either hijacking.

The hijacking of American Airlines Flight 658 took place when three armed Haitian soldiers stormed the A-300 airbus from an air operations area of Port-Au-Prince International Airport. The soldiers surrendered their weapons after the crew agreed to transport them to New York. Upon arrival in New York, the hijackers were arrested by U.S. law enforcement authorities. The hijackers were apparently seeking political asylum. The flight carried 221 passengers and a crew of 10.

Trans World Airlines Flight 469, with 121 passengers and a crew of 7, was hijacked while on scheduled service between San Juan, Puerto Rico, and Miami, Florida. The hijacker, claiming to have a bomb, commandeered the aircraft and demanded to be flown to Cuba. The pilot diverted and landed safely at Grand Turk Island, which was identified to the hijacker as Cuba. The hijacker disembarked and surrendered himself to the authorities, who were represented as being Cuban. The hijacker was arrested and taken into custody. No bomb was found in the possession of the hijacker or on the aircraft.

The four foreign hijackings involved Aerolines Centrales De Colombia (ACES) on August 1; Viacao Aerea Sao Paulo (VASP) on September 29; an alleged hijacking of Iran Air on October 22; and the flight of a Soviet Aeroflot aircraft on December 2. In this incident, four armed Soviets commandeered a bus load of Soviet school children and negotiated for \$2 million ransom and passage out of the Soviet Union. The hijackers were granted passage to Israel where they were apprehended by Israeli authorities and subsequently returned to the Soviet Union. There were no casualties during the incident.

(See Exhibits 1, 2, 3, and 4)

#### IV. BASIC POLICIES

Operating on the concept of shared responsibilities among air carriers; airports; Federal, State, and local governments; and the airline passengers, the U.S. Civil Aviation Security Program has continued to be effective in preventing aircraft hijackings and other criminal acts against civil aviation. The spirit of cooperation which characterizes their mutually beneficial working relationships has been very helpful in making the system work well. To ensure safe air travel, the FAA establishes and enforces regulations, policies, and procedures; provides highly trained professional Federal Air Marshals for in-flight security on U.S. airlines operating in sensitive areas of the world; and, in general, provides overall guidance for the safety of passengers, baggage, and cargo, as well as the safeguarding of aircraft. The air carriers bear the primary responsibility for providing screening for passengers and baggage. Similarly, airport operators are responsible for maintaining a secure ground environment and for providing local law enforcement support for airline and airport security measures. Finally, the passengers, the ultimate beneficiaries of the security program, pay for the costs of the program through security charges included in airline ticket prices.

(See Exhibit 5)

## V. PASSENGER SCREENING -- SCOPE AND EFFECTIVENESS

In November, the FAA adopted a tough new policy for assessing civil penalties against airline passengers and others who try to take guns through airport screening points, either intentionally or unintentionally. The new FAA policy calls for mandatory civil penalties of \$1,000 to \$10,000, depending on the circumstances. This stringent enforcement policy is a response to the continuing high number of firearms detected at airport checkpoints--2,773 in 1988. The agency believes that enhanced enforcement is necessary to improve compliance and thereby significantly reduce the risk of violence or accidental discharge of a weapon.

Mandatory security screening procedures, which include inspection of all passengers and their carry-on items, have been in effect since 1973. Since the initiation of these security measures, over 10 billion persons and their carry-on items have been screened. This has resulted in the detection of over 42,800 firearms and over 19,500 related arrests.

Passenger screening is carried out to detect and prevent the carriage of firearms, explosives, incendiaries, and other deadly or dangerous weapons aboard air carrier aircraft. The FAA's analysis of screening checkpoint activity includes the recording and study of the number of items detected and the number of false threats received, as well as related information concerning individuals arrested. Results of U.S. screening activities for this reporting period are detailed as follows:

Over 523 million persons were processed through screening checkpoints at U.S. airports. A total of 1,482 firearms were detected. X-ray inspection resulted in the detection of 1,406 firearms in carry-on items, 36 firearms were detected by use of metal detectors, and 40 were detected as a result of physical searches. In addition, there were three explosive/incendiary devices discovered during this period. All three devices were discovered by X-ray inspection. There were 814 persons arrested at screening points for the unauthorized carriage of firearms or explosive/incendiary devices.

In addition to criminal action taken by Federal and local authorities, individuals who, without proper authorization, attempt to carry firearms or explosives/incendiaries through screening checkpoints also may be subject to civil penalties imposed by the FAA.

(See Exhibits 6 and 7)

## VI. COMPLIANCE AND ENFORCEMENT

Federal Aviation Regulations (FAR) require the adoption and implementation of security programs by airports and air carriers. These security programs contain security procedures which are designed to prevent or deter aircraft hijackings, sabotage, and related criminal acts. The security procedures are under constant review by the FAA and the aviation industry to ensure that effective measures are implemented to counter the ever changing threat to U.S. civil aviation.

There are 119 U.S. scheduled and public charter air carriers of various sizes that are required to adopt FAA-approved security programs. Each of these U.S. air carriers has adopted the Air Carrier Standard Security Program (ACSSP), which was developed by the FAA in consultation with the industry. This program requires each air carrier to implement the same standard security procedures. The FAA has authority to unilaterally amend the ACSSP when safety and the public interests are determined to be at risk in an emergency situation.

There are 111 foreign scheduled and public charter air carriers that serve airports within the United States. Although foreign air carriers are also required to adopt and use security programs, U.S. regulations do not require a foreign air carrier to submit its security program to the FAA for approval. A notice of proposed rulemaking (NPRM) was issued proposing an amendment of Part 129 of the FAR to require foreign air carriers with service to the United States to submit a written security program to the FAA for acceptance by the Administrator.

The 230 domestic and foreign scheduled and public charter air carriers serve 402 airports within the United States. Each of these airports is required to adopt and use a security program which provides a secure operating environment for these air carriers. Airport security programs are designed to meet the threat to the specific airport. Of the 402 airports, 17 have been determined to have a need for increased oversight and implementation of special security requirements. This additional level of security precaution has been effected through changes to the FAA-approved airport security programs for those 17 airports. To monitor the implementation of the special requirements, increased inspection and reporting requirements have been established. In addition, the FAA headquarters maintains and reviews the security program of each of these 17 airports to ensure that a high level of security is maintained.

To improve the development of national guidance and policy concerning implementation of security requirements, significant airport activity reports and air carrier performance reports are periodically provided to the Office of Civil Aviation Security by FAA regional security divisions. The information contained in these reports assists in determining if identified problems are specific to a particular airport or air carrier or are universal in nature.

While striving to achieve compliance through cooperation, the FAA must ensure that personnel of the air carriers, airports, and other organizations properly comply with the FAR and applicable security programs. FAA civil aviation security special agents inspect the aviation industry's security operations on a regularly scheduled basis and at unscheduled intervals. During these inspections, weaknesses and deficiencies are corrected, security violations are identified, and enforcement action initiated.

To ensure the safety and security of the traveling public, all alleged and apparent violations of security requirements are investigated and appropriate enforcement actions are taken. These actions may take the form of administrative actions (warnings or letters of correction), civil penalties, or criminal prosecution. Public Law 100-223 raised air carrier penalties to a maximum of \$10,000 for each violation of certain titles of the Federal Aviation Act that occurred after December 30, 1987.

During the period July 1 through December 30, 1988, 1,012 investigations of alleged security violations by U.S. and foreign air carriers, airports, and individuals were closed. In 356 of the cases, civil penalties totaling \$279,010 were collected. In 456 cases, administrative actions were taken. Alleged violations were not substantiated in 200 other cases.

(See Exhibit 8)

## VII. ASSESSMENTS OF SECURITY MEASURES MAINTAINED AT FOREIGN AIRPORTS

Public Law 99-83, the International Security and Development Cooperation Act of 1985, was enacted on August 8, 1985. Title V, Part B of the Act amends Section 1115 of the Federal Aviation Act of 1958 and directs the Secretary of Transportation to assess the effectiveness of security measures at those foreign airports being served by U.S. air carriers, those foreign airports from which foreign air carriers serve the United States, those foreign airports which pose a high risk of introducing danger to international travel, and at such other airports as the Secretary may deem appropriate. The Act requires that specific action be taken regarding airports which do not maintain and administer effective security measures.

The FAA has been delegated the responsibility for the implementation of certain legislative requirements in Public Law 99-83. These include the assessment of security measures at foreign airports and consultation with the Secretary of State concerning threats to U.S. citizens traveling abroad.

At present, there are approximately 250 foreign airports which meet the assessment requirements of Public Law 99-83. This number fluctuates as changes in air carrier service take place at these airports. During the reporting period, FAA conducted 45 foreign airport assessments in 23 countries. The number of visits to each foreign airport is continually subject to change. Changes are based on reviews and analyses of current security conditions and threat information, permitting FAA to refocus its resources as warranted. Additionally, the number of assessments conducted during 1988 was significantly impacted by the Olympics related deployment of FAA security personnel referred to in Section VIII of this report.

Assessments consist of indepth analyses of the security measures at the airports visited, using a standard which is based, at a minimum, on the Standards and appropriate Recommended Practices contained in Annex 17 to the Convention on International Civil Aviation. If FAA develops information indicating that an airport does not maintain and administer effective security measures, these assessments are reported to the Secretary of Transportation. Public Law 99-83 provides for notification to the foreign country involved when a determination is made by the Secretary of Transportation that a foreign airport does not maintain and administer effective security measures. Notification includes recommended steps to remedy the problem. The law also specifies when and how the public is to be notified of the determination. Public notice occurs when the foreign government fails to bring security measures up to the standard within 90 days of being notified of the Secretary of Transportation's determination.



Under Title 14 Code of Federal Regulations (CFR) Parts 108 and 129, the FAA regularly conducts inspections of all U.S. air carrier stations at foreign airports and those foreign air carrier stations having direct flights to the United States. These inspections are conducted both separately and in conjunction with the assessments of the foreign airports.

A General Accounting Office (GAO) report dated December 22, 1988, recommended that the FAA perform additional analyses during foreign airport assessments to include review of the host country's security system testing procedures. The FAA has accepted the recommendations and begun implementation. A key feature of the report involves a cooperative effort between the FAA and the Department of State's Anti-Terrorism Assistance Program in the identification of security training and equipment needs.

If the Secretary of Transportation at any time determines, after consultation with the Secretary of State, that a condition exists which threatens the safety or security of passengers, aircraft, or crew traveling to or from a specified airport, the Secretary of Transportation must immediately initiate the public notification procedures and, in addition, apprise the Secretary of State, who must issue a travel advisory. Under these circumstances, the Secretary of Transportation is also required to consider whether the public interest necessitates the immediate suspension of service between the United States and the specified airport.

### VIII. INTERNATIONAL TECHNICAL ASSISTANCE

During the reporting period, representatives of the Office of Civil Aviation Security provided indepth security briefings at the FAA headquarters for 34 high ranking foreign nationals representing Egypt, Fiji, Federal Republic of Germany, Japan, Pakistan, Saudi Arabia, and Sweden.

The FAA security representatives also joined with the Department of State's Anti-Terrorism Assistance Program officials in planning, with their counterparts in the Canadian Government, a long-range assistance effort for the Government of the Philippines that was directed toward improving security at the Manila International Airport.

In light of security concerns surrounding the Summer Olympics, the FAA deployed civil aviation security special agents to Seoul, Korea, and 9 other high threat airports. Their mission was to monitor security for U.S. air carriers with service to Seoul and to ensure compliance with all mandated security requirements.

Civil aviation security personnel made presentations at the International Civil Aviation Organization (ICAO) Regional Aviation Security Seminar in Dakar, Senegal, and at the annual meeting of the International Association of Airline Security Officers in Cairns, Australia.

The FAA civil aviation security special agents participated in several working level meetings in Cairo, Egypt, in support of a multimillion dollar security related U.S. Agency for International Development (USAID) project.

## IX. FEDERAL AIR MARSHAL (FAM) PROGRAM ACTIVITIES

The enactment of Public Law 99-63 established an explicit statutory basis for the FAA's FAM Program. This statute provided the Secretary of Transportation with the authority to authorize (with the approval of the Attorney General and the Secretary of State) civil aviation FAM's to carry firearms and to make arrests without warrant for any offense against the United States committed in their presence if they have reasonable grounds to believe that the person to be arrested has committed or is committing a felony.

FAM's are recruited as civil aviation security special agents. When not on FAM missions, they perform the same wide variety of civil aviation security functions as other security personnel. However, as FAM's, they receive intensive, highly specialized law enforcement training at the Federal Law Enforcement Training Center (FLETC), followed by recurrent training every 6 months. In this reporting period, one basic class and five inservice classes were successfully conducted at the FLETC training site located at Marana, Arizona.

FAM's also continued to provide security coverage of selected flights operating in especially sensitive areas of the world, covering approximately 7,203,000 nautical miles. The missions, all flown with U.S. air carriers, were selected based on analysis of worldwide terrorist activities. Since civil aviation continues to represent an attractive target to terrorists, FAM's will continue to provide an effective in-flight security countermeasure.

## X. CIVIL AVIATION SECURITY INITIATIVES

The FAA continues to aggressively pursue civil aviation security initiatives involving policies, standards, and practices of domestic and international airports and air carriers. Several significant initiatives that are currently underway are as follows:

- ° In late December, the FAA drafted and set forth more stringent security requirements designed to provide additional protection from explosive devices to passengers, crews, and aircraft involved in international air travel. These procedures involve the acceptance, transfer, and handling of baggage and cargo, and the screening of originating, transfer, and interlining passengers and their carry-on baggage.
- ° During the last 6 months of 1988, the FAA began to file consolidated civil penalty actions against air carriers based on the carriers' failure to detect an FAA test object during the screening of passengers and carry-on baggage. In three separate rounds of filings, the FAA sought \$3.977 million in civil penalties. The penalties were calculated at \$1,000 for each failure if such failure did not reduce the carrier's rate of detection below 95 percent or at \$10,000 per failure if the carrier's rate of detection was below 95 percent. The test objects include guns, dynamite, bombs, and other objects large or dense enough to disguise weapons.
- ° A notice of proposed rulemaking (NPRM) was issued proposing an amendment to Part 129 of the FAR. This amendment will require foreign air carriers with service to the United States to submit a security program to the FAA for acceptance by the Administrator.

## XI. FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM

The FAA K-9 Explosives Detection Team Program was implemented in 1972. Currently, there are 31 local law enforcement organizations participating in this program. Each jurisdiction must agree to establish two teams in order to participate. The FAA will support up to five teams (each team consists of one dog and one handler) for each participating organization.

The U.S. Air Force, through a reimbursable agreement with the FAA, provides initial training at Lackland Air Force Base, Texas. The Air Force also provides follow-on evaluations, and refresher training for civilian law enforcement officers and K-9 dogs in patrol techniques and detection of explosives.

All teams assigned to this program must be familiar with aircraft and automobile searches, baggage and related containers, and air operations areas. Participants in this program can be dispatched to any location throughout the world where this type of specialized aviation explosives detection technical assistance is required. Every team is evaluated at least once a year and must recertify or return to Lackland for additional training.

The K-9 Explosives Detection Team Program continues to serve as a defense against one of the main threats to safety in air travel, that of explosives and improvised explosive devices.

(See Exhibit 9, 10, and 11)

## XII. RESEARCH AND DEVELOPMENT

Since the inception of its Civil Aviation Security Research and Development Program in 1976, the FAA has focused its efforts on the development of automated detection equipment to screen passengers, checked and carry-on baggage, and cargo for concealed deadly or dangerous weapons and explosives. This remains a priority objective. Significant progress has been made in this area through the use of advanced bulk and vapor detection techniques, but terrorists' access to newer, low vapor-pressure sheet explosives makes this problem a continuing greater challenge.

A review of the technologies available to detect explosives that could be carried on an aircraft by an individual quickly led to the conclusion that the explosive must be detected by the characteristic vapor or "odor" that it emits. The major challenge has been the development of sensitive devices that can collect adequate samples from low vapor-pressure explosives, yet are selective enough to distinguish explosives from background vapors commonly found in vapor detection technology. The FAA has conducted research to incorporate the vapor detector into a passenger screening portal suitable for airport use. The portal uses large amounts of air to sweep vapors from passengers into the collector. Airport testing of a prototype unit was conducted on over 2,000 passengers. False alarms were less than one percent; however, the processing speed needs improvement to attain the goal of 10 or more passengers per minute. The FAA continues to work with a private contractor to further increase both sensitivity and processing speed.

The detection of explosives in checked baggage is a difficult problem complicated by the extraordinary variety of objects in passenger luggage and the diversity of the explosives threat. The FAA has been performing research and development on this problem for the past 10 years. Efforts have been accelerated since 1985, leading to the airport testing of two prototype thermal neutron analysis systems beginning in May 1987. Airport testing of checked baggage was performed at San Francisco and Los Angeles International Airports on a mixture of domestic and international bags. Over 40,000 pieces of checked baggage were examined and the results were very favorable. All decisions relating to the detection of the explosive simulants within the luggage were made by the computer. There is no human decisionmaking or interpretation involved in the detection process. The FAA has purchased six thermal neutron analysis units and accelerated plans for deployment of these explosives detection devices.

The FAA continues to search for additional concepts and technologies which will result in explosives detection systems that are more effective, less complex, and less costly than those currently under development. Given the fact that such efforts are high risk and long term, the FAA strategy under the expanded and accelerated program is to increase the number and technical quality of new concepts investigated. The FAA advertised this requirement through the procurement process in fiscal years 1985, 1986, 1987, and 1988.

Approximately 20 proposals were evaluated each year. Technologies were funded employing high-energy physics approaches to detect explosives in baggage and cargo. Also funded were several alternative vapor collection and detection techniques which promise to be more sensitive or efficient than techniques produced in earlier research and development efforts.

In the FAA's concourse security program, emphasis is placed on screening people. The FAA is currently directing research to improve the operation of existing metal detector technology. The objective of this development effort was to improve hardware design and signal processing to reduce false alarms while retaining detection of the smallest handguns.

The FAA has also focused research energies and resources on the unique problems posed by nonmetallic weapons. Two new detection concepts are currently being investigated. The technologies involved include infrared imaging as well as sonic and microwave technologies. Studies are ongoing to assess these technologies for detection of threat weapons, resolution, operational problems, processing speed, and potential false alarms. The FAA projects that it will have a system to conduct technology to detect nonmetallic weapons during 1990. No nonmetallic weapons are reported in commercial production at this time.

There is an effort in the FAA's Research and Development Program to enhance and automate X-ray systems used in the screening of passenger carry-on items while, at the same time, several manufacturers are independently showing great innovation in extending X-ray technology to identify specific threats. Studies are underway to improve concourse X-ray system performance by concentrating on the development of automatic pattern recognition software and hardware. Integrated into current X-ray detectors, automatic pattern recognition systems would alert the operator to suspicious items in luggage and graphically highlight the threat.

The FAA has funded a long-term contractual effort with Sandia National Laboratory to evaluate existing civil aviation security procedures and develop enhanced procedures to respond to an increased level of threat. Baltimore-Washington International Airport (BWI) has been chosen to be the test site for this project. BWI airport management, air carrier representatives, FAA personnel, and Sandia staff have been meeting twice monthly to develop these enhanced procedures and systems. Once in place, the enhanced measures will be evaluated for effectiveness and operational impact over several months. Findings will be used as the basis for development of new security requirements.

In conclusion, the FAA is aggressively approaching the problem of detecting the terrorists' tools, weapons, and explosives by focusing on detecting the fundamental properties of the threat. Mature technologies, like thermal neutron analysis, are being procured for operational use. Other technologies are being pursued in anticipation of potential threats such as the nonmetallic handgun and a new systems approach to threat assessment under development and testing. The goal of the FAA research program is to develop technology to fit into a total security system to deter and defeat threats against air transportation.



### XIII. HAZARDOUS MATERIALS COMPLIANCE AND ENFORCEMENT PROGRAM

Hazardous materials inspections/surveillance activities are conducted by civil aviation security special agents in conjunction with regularly scheduled security inspections of air carriers and airports. At a minimum, inspections are conducted of all air carriers, both U.S. and foreign, when it is determined that the air carrier (passenger or cargo) regularly accepts and transports or handles hazardous materials. These inspections are conducted based on a review and analysis of prior hazardous materials shipments, incident experience, identified or anticipated problem areas, and a history of violations.

In order to determine compliance effectiveness and ensure that freight forwarders and shippers meet their basic responsibilities in the shipment of hazardous materials by air, the FAA is continuing inspection efforts at the major air carrier facilities at major airports. These locations are considered collection points for shipments originating from many freight forwarders and shippers and are where these shipments first come under the FAA jurisdiction. When it is noted that problems exist with a particular company, assistance can be directed to the problem areas concerned.

Increased amounts of hazardous materials are being shipped by air daily. It is estimated that approximately 3 1/2 to 5 percent of all cargo shipped in air transportation is classed as hazardous materials. As a result, increased emphasis is being directed to the hazardous materials compliance and enforcement program.

The FAA evaluated 34 Department of Transportation proposed exemptions affecting the transportation of hazardous materials by air and reviewed an additional four requests for emergency exemptions. Civil aviation security special agents participated in five Flight Standards National Aviation Safety Inspection Program inspections for the purpose of determining air carrier compliance with regulations governing air transportation of hazardous materials.

Evaluations were conducted within the FAA on a new and improved hazardous materials inspection/surveillance/activity automated data base. As a result of these evaluations, the new system was implemented on October 1, 1988. All regions now have the ability to enter information as it is accomplished. The data base system is designed to collect data at the field, regional, and national level. It contains information on airports, air carrier stations, and operators that might or might not handle hazardous materials, as well as information on hazardous materials inspections.

The new automated data base will provide an improved method for tracking hazardous materials shipments by specific air carriers/freight forwarders and locations from where the shipments originate.

(See Exhibits 12 and 13)

#### XIV. USE OF EXPLOSIVES AGAINST AVIATION

On December 21, 1986, an explosive device was detonated aboard Pan American World Airways (Pan Am) Flight 103 en route from London to New York. The flight, which had originated in Frankfurt, Germany, was at 31,000 feet near the Scotland-England border when the explosion occurred. All 259 persons aboard the aircraft were killed in addition to 11 persons on the ground in the village of Lockerbie, Scotland.

Information made public by United Kingdom authorities indicates that two parts of a metal baggage container show evidence of a detonating high explosive. The explosive's residue recovered from the debris has been positively identified and is consistent with the use of a high performance plastic explosive. The investigation, which is being jointly conducted by authorities from the United Kingdom and the United States, is examining numerous items of the wreckage. Each of these items is being subjected to lengthy chemical and metallurgical forensic examination.

On October 26, 1988, West German authorities arrested a group of individuals associated with a terrorist group in Frankfurt, Germany. At the time of the arrest, an improvised explosive device hidden in a tape player/radio was confiscated. The device reportedly contained an altitude/pressure sensitive arming feature. While the intended use of the device was unknown, an altitude/pressure sensitive device would appear to be intended for use against aircraft. A multinational investigation into possible links between this West German terrorist group and the Pan Am Flight 103 incident is being conducted.

(See Exhibit 14)

## XV. OUTLOOK

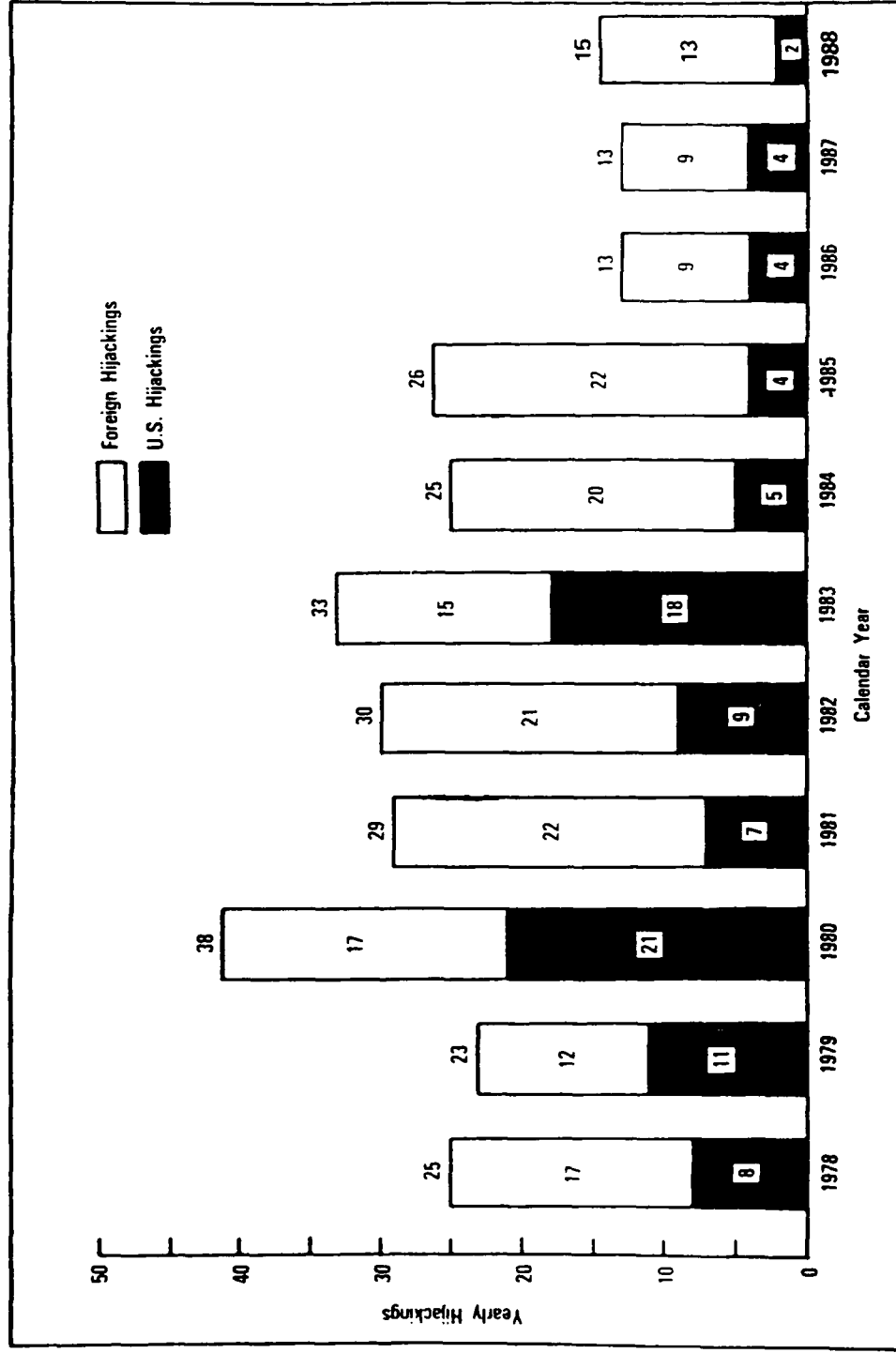
The worldwide terrorist threat against civil aviation persists. American interests also continue to be targeted by terrorist organizations and those countries supporting international terrorist activities. Civil aviation will continue to represent a very tempting target to criminals and terrorists because of its high visibility. As evidence of a continuing threat to this industry, so vital to the world's economy, most governments have increased their security efforts to provide a safer and more secure air transportation system. The recurring assessments of security measures implemented at foreign airports assist foreign airport authorities in improving and maintaining the overall security posture of their international airports.

In the United States, joint initiatives have been undertaken with the aviation industry and with airport operators to implement improved security measures. Special emphasis has been placed on improved monitoring of security procedures at major U.S. airports. Efforts will continue in the review, testing, and evaluation of airports' contingency plans utilizing hijack exercises throughout the United States and in the research and development efforts to improve technical equipment for passenger and baggage screening. The FAA is strongly committed to a civil aviation security system which provides for the safe, secure, efficient, and reliable movement of people and property.



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## ***U.S. and Foreign Air Carrier Aircraft Hijackings*** (Detailing the Period January 1, 1978-December 31, 1988)



# **U.S. and Foreign Air Carrier Aircraft Hijacking Summaries (July 1 - December 31, 1988)**

## **U.S.**

Date	Airline Flight	Number Aboard	Boarding Point	Destination / Objective	Remarks
10/1/88	American Airlines Flight 658	231	Port Au Prince, Haiti	Flee Haiti	Surrendered to Crew
12/11/88	TWA Flight 469	128	San Juan, Puerto Rico	Cuba	Surrendered on Grand Turk

## **Foreign**

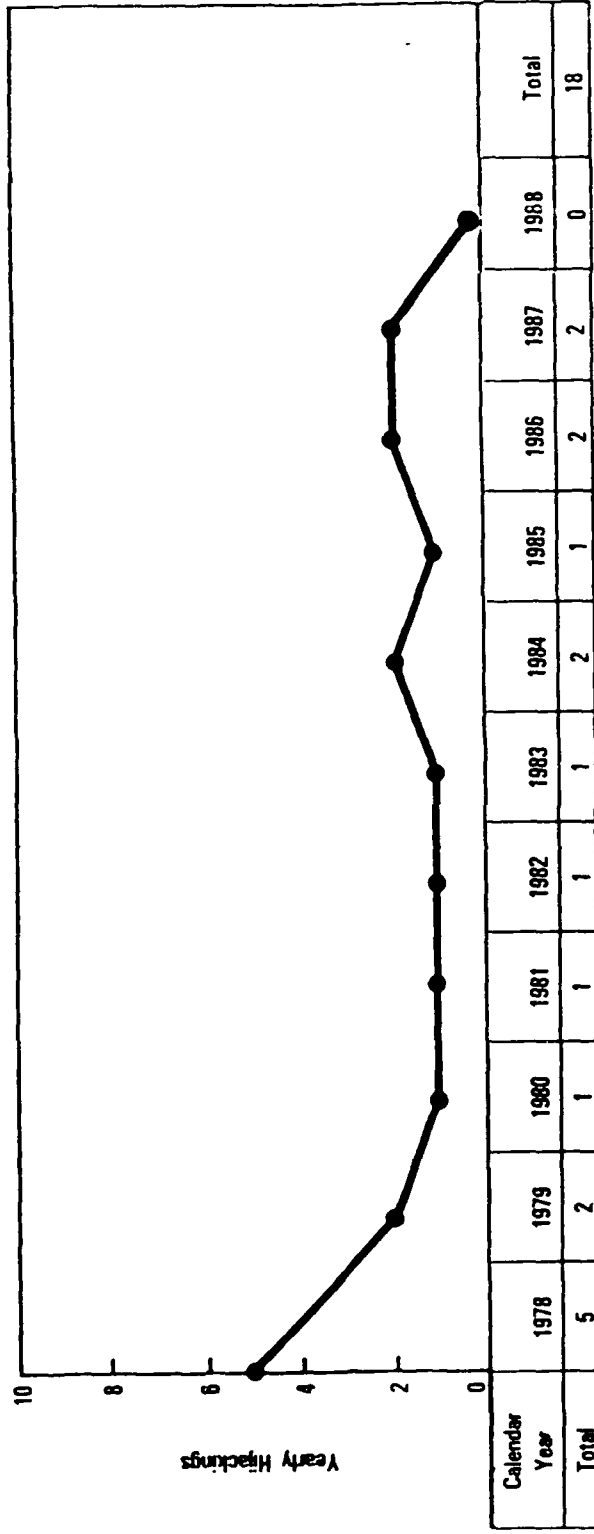
8/1/88	ACES (Colombia)	22	El Barge, Colombia	Robbery	Hijackers Escaped
9/29/88	VASP (Brazil)	105	Belo Horizonte, Brazil	Brasilia	Hijacker Killed
10/22/88	Iran Air	250	Tehran, Iran	London	Plane Returned to Iran. No arrests.
12/2/88	Aeroflot	unknown	Mineralnyye Vody, USSR	Israel	Extortion



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## ***U.S. General Aviation Aircraft Hijackings***

(Detailing the Period January 1, 1978-December 31, 1988)

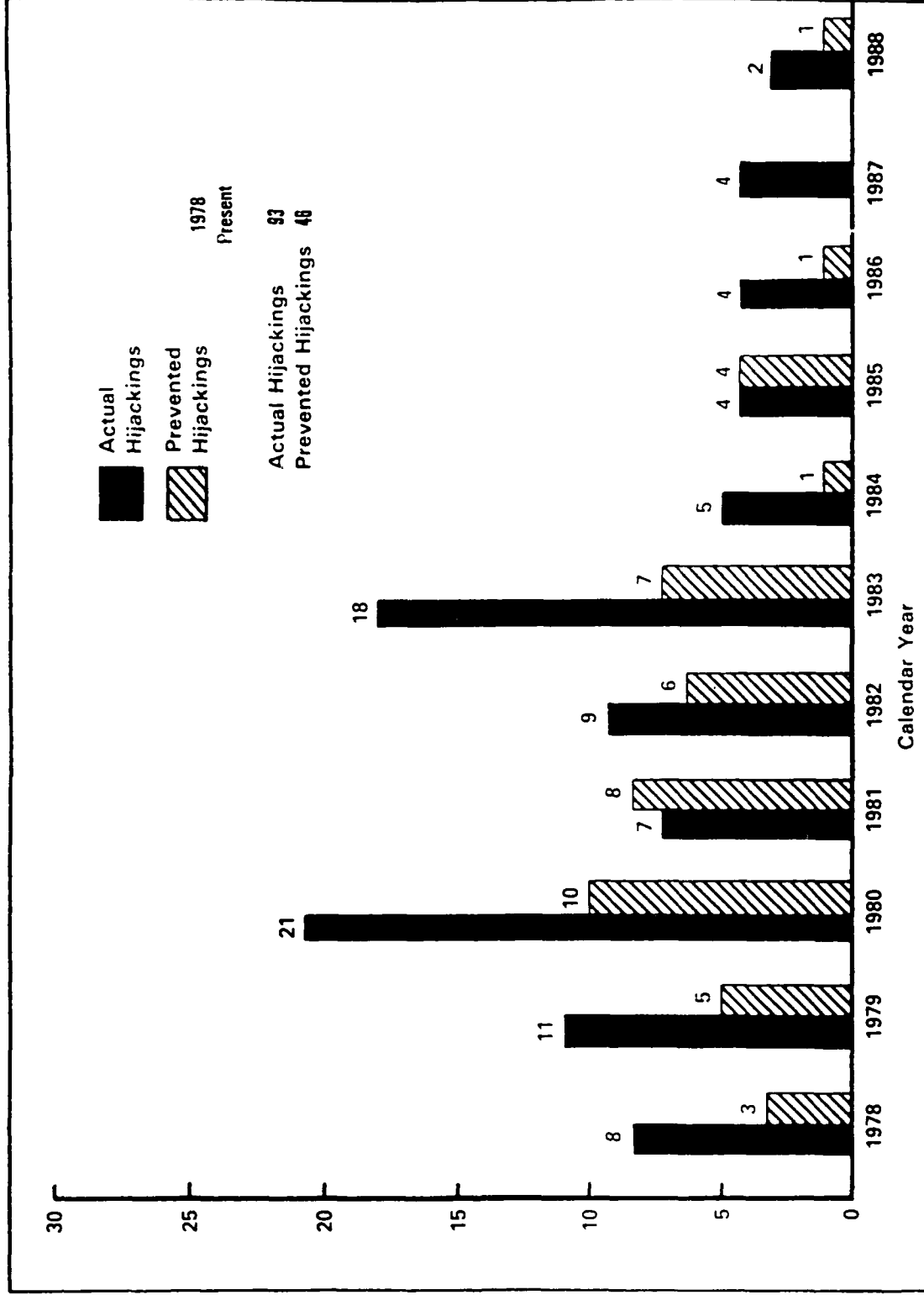




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# ***Actual Hijackings & Prevented Hijackings of U.S. Air Carrier Aircraft***

(Detailing the Period January 1, 1978-December 31, 1988)



**PREVENTED HIJACKINGS:** Incidents in Which It Appeared the  
Individuals Involved Intended to Hijack an Aircraft but  
Were Prevented From Doing So by Security Procedures.



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## *Civil Aviation Security Basic Policies*

<u>Program Element</u>	<u>Responsibility</u>	<u>Actions</u>
Air Carriers	Secure Travel	<ul style="list-style-type: none"><li>• Maintain Responsive Security Programs</li><li>• Screen Passengers, Carry-on Items</li><li>• Secure Baggage, Cargo Procedures</li><li>• Protect Aircraft</li></ul>
Airports	Secure Operating Environment	<ul style="list-style-type: none"><li>• Maintain Responsive Security Programs</li><li>• Protect Air Operations Area</li><li>• Provide Law Enforcement Support</li></ul>
FAA	Leadership	<ul style="list-style-type: none"><li>• Identify and Analyze Threat</li><li>• Prescribe Security Requirements</li><li>• Coordinate Security Operations</li><li>• Provide Technical Assistance</li><li>• Enforce Regulations</li></ul>
Users	Program Costs	<ul style="list-style-type: none"><li>• Security Funded as Operating Cost of System</li></ul>



## ***Civil Aviation Security Scope and Effectiveness 1973-1988***

- Over 10 Billion Persons Screened
- Over 11.6 Billion Pieces of Carry-on Items Inspected
- Over 42,800 Firearms Detected
- Over 19,500 Related Arrests
- 118 Hijackings or Related Crimes May Have Been Prevented by Airline and Airport Security Measures



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# Civil Aviation Security Airline Passenger Screening Results

January 1981 - December 1988

	1981 Jan-June	1981 July-Dec	1982 Jan-June	1982 July-Dec	1983 Jan-June	1983 July-Dec	1984 Jan-June	1984 July-Dec	1985 Jan-June	1985 July-Dec	1986 Jan-June	1986 July-Dec	1987 Jan-June	1987 July-Dec	1988 Jan-June	1988 July-Dec
<b>Persons Screened (Millions)</b>	294.4	304.1	319.5	310.7	313.9	395.2	367.4	408.2	481.1	511.8	550.3	505.0	548.7	546.9	531.2	523.7
<b>Weapons Detected</b>																
Firearms	971	1284	1288	1390	1363	1421	1325	1632	1448	1539	1525	1716	1645	1607	1291	1482
(1) Handguns	915	1209	1243	1316	1303	1331	1265	1501	1385	1438	1415	1566	1519	1493	1226	1365
(2) Long Guns	7	37	16	41	22	45	31	69	38	52	49	97	48	51	18	56
(3) Other	49	38	27	33	38	45	29	62	25	49	61	53	78	63	47	61
Explosive/Incendiary Devices	8	3	0	1	4	0	4	2	5	7	4	7	5	9	8	3
<b>Persons Arrested</b>																
For Carriage of Firearms	534	653	651	663	633	649	565	720	602	708	645	770	734	847	679	814
Explosives	34	15	21	6	7	27	6	21	17	25	64	25	44	37	123	99
For Giving False Information																

Source: Reports of Passenger Screening Activities at U.S. Airports

# Civil Aviation Security Compliance and Enforcement Actions

	1973 Through 1981	1982	1983	1984	1985	1986	1987	1988
<b>U.S. AIR CARRIERS</b>								
Warnings	2,043	164	231	191	426	439	489	791
Letters of Correction	1,022	98	51	104	101	156	140	124
Non Enforcement Actions	541	44	52	33	39	79	107	214
Civil Penalties (Amount)	423 (\$434,197)	28 (\$10,508)	37 (\$26,861)	56 (\$26,861)	42 (\$105,296)	83 (\$122,221)	160 (\$340,850)	196 (\$298,735)
Investigations Closed	4,029	334	371	384	608	757	896	1,325
Investigations Pending	416	91	163	88	145	362	1,262	2,279
<b>FOREIGN AIR CARRIERS</b>								
Warnings	21	2	3	5	11	8	17	31
Letters of Correction	44	2	1	0	3	13	9	30
Non Enforcement Actions	29	2	2	3	4	6	5	4
Civil Penalties (Amount)	2 (\$25,000)	0	0	3 (\$6,000)	0	0	2 (\$26,000)	1 (\$1,800)
Investigations Closed	96	6	6	11	18	27	33	67
Investigations Pending	36	4	4	1	7	13	55	104
<b>AIRPORTS</b>								
Warnings	797	59	57	43	53	60	46	46
Letters of Correction	535	21	9	14	24	27	32	49
Non Enforcement Actions	147	9	18	16	10	22	28	15
Civil Penalties (Amount)	128 (\$96,025)	8 (\$6,300)	8 (\$7,250)	7 (\$6,750)	6 (\$10,900)	15 (\$16,950)	26 (\$28,650)	56 (\$53,750)
Investigations Closed	1,607	97	92	80	93	124	132	166
Investigations Pending	194	18	14	12	25	58	258	451
<b>INDIVIDUALS</b>								
Administrative Corrections	4,451	2,267	2,474	1,964	2,450	1,430	2,158	1,044
Non Enforcement Actions	543	161	207	173	171	238	264	245
Civil Penalties (Amount)	471 (\$92,270)	114 (\$28,085)	270 (\$84,190)	251 (\$79,429)	278 (\$80,705)	391 (\$129,292)	449 (\$183,770)	618 (\$258,218)
Investigations Closed	5,445	2,542	2,951	2,388	2,899	2,059	2,871	1,907
Investigations Pending	1,324	483	550	662	508	813	3,360	3,701

# **FAA Local Law Enforcement K-9 Explosive Detection Team Participants July 1, 1988 - December 31, 1988**

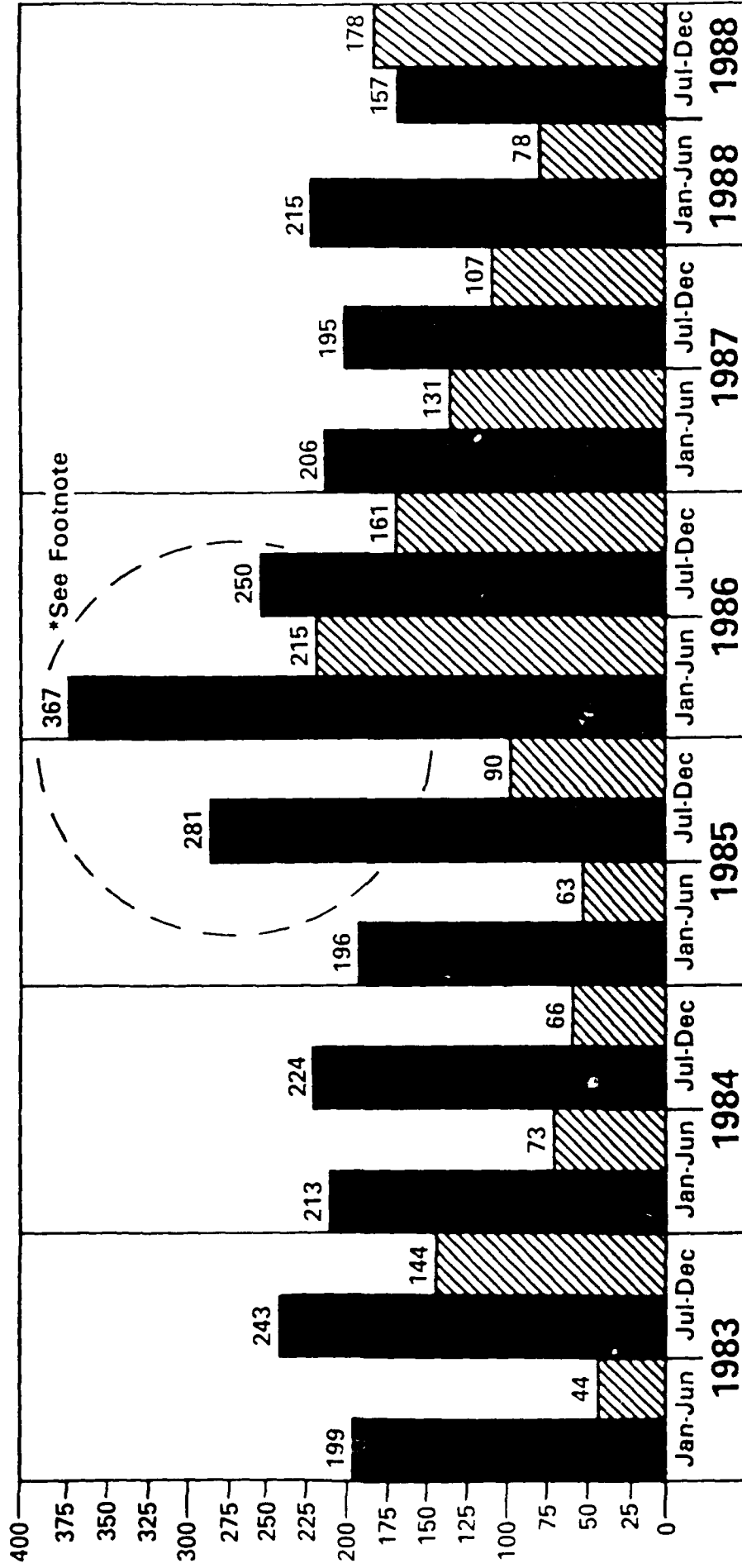
LOCATION	PARTICIPANT TEAM
<b>ALABAMA</b> Birmingham (BHM)	Birmingham Police Department
<b>ARIZONA</b> Phoenix (PHX) Tucson (TUS)	Phoenix Police Department Tucson Police Department
<b>CALIFORNIA</b> Los Angeles (LGB/BUR LAX Backup) Los Angeles (LAX) San Diego (SAN) San Francisco (SFO) San Francisco (SFO Backup)	Los Angeles County Sheriff's Office Los Angeles Police Department San Diego County Sheriff's Office San Francisco Airport Police Department San Mateo County Sheriff's Office
<b>COLORADO</b> Colorado Springs (COS)	Colorado Springs Police Department
<b>FLORIDA</b> Jacksonville (JAX) Miami (MIA)	Jacksonville Port Authority Metro Dade Police Department
<b>GEORGIA</b> Atlanta (ATL)	Atlanta Police Department
<b>LOUISIANA</b> New Orleans (MSY)	Jefferson Parrish Sheriff's Office
<b>MARYLAND</b> Baltimore (BWI)	Maryland State Police
<b>MASSACHUSETTS</b> Boston (BOS)	Massachusetts State Police
<b>MICHIGAN</b> Detroit (DTW)	Wayne County Sheriff's Office/Airport Division

LOCATION	PARTICIPANT TEAM
<b>MISSOURI</b> Kansas City (MCI) St. Louis (STL)	Kansas City Police Department St. Louis Airport Police Department
<b>NEW YORK</b> Buffalo (BUF)	Niagara Frontier Transportation Authority Cheektowaga Police Department
<b>NORTH DAKOTA</b> Bismarck (BIS)	Bismarck County Police Department
<b>OKLAHOMA</b> Tulsa (TUL)	Tulsa Police Department
<b>OREGON</b> Portland (PDX)	Port of Portland Police Department
<b>PENNSYLVANIA</b> Pittsburgh (PIT)	Allegheny County Police Department
<b>PUERTO RICO</b> San Juan (SJU)	San Juan Police Department
<b>TENNESSEE</b> Memphis (MEM)	Memphis Police Department
<b>TEXAS</b> Dallas (DFW) Houston (IAH)	Dallas/Fort Worth Airport Police Department Houston Police Department
<b>UTAH</b> Salt Lake City (SLC)	Salt Lake City Airport Authority
<b>WASHINGTON</b> Seattle (SEA)	Port of Seattle Police Department
<b>WISCONSIN</b> Milwaukee (MKE)	Milwaukee County Sheriff's Office

[illegible]

**As of: 12/31/88**

# Bomb Threats Against U.S. Aircraft and U.S. Airports 1983 Thru 1988



Key

- Threats Against Aircraft
- Threats Against Airports

\*An Analysis of the Period From June 1, 1985, Through April 30, 1986, Reveals That This Statistical "Spike" May Be Attributed, in Part, to Extensive Publicity Given Aviation Explosive Incidents.

# Civil Aviation Security Hazardous Materials Compliance and Enforcement Penalty Actions

	1984		1985		1986		1987		1988	
	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun/July-Dec	Jan-Jun	July-Dec
*Criminal Cases Initiated	2	0	1	0	0	0	1	0	1	0
Criminal Cases Completed	0	2	0	1	0	0	0	1	0	0
Total Fines/Years	0	6,000	0	1,000	0	0	0	5 Yrs**	0	0
Civil Penalty Cases Initiated	38	40	43	30	41	44	61	51	70	42
Civil Penalty Cases Completed	22	36	19	27	26	29	20	25	21	16
Total Fines Collected	71,200	96,735	107,600	183,500	161,100	188,950	158,200	199,400	133,500	146,000

\*If Criminal Cases Cannot Be Supported by Local U.S. Attorney's, They Are Converted to Civil Penalty Cases.

\*\*Confinement.

# ***Civil Aviation Security Hazardous Materials Inspections/ Surveillance***

	1984	1985	1986	1987	1988
Air Carrier Inspections	3,701	3,863	3,441	5,001	5,988
Freight Forwarder Inspections	312	188	207	377	302
Total Packages Inspected	9,660	9,614	11,048	14,644	19,231
Locations Inspected	327	513	407	386	431
Violations	407	353	400	484	422
Full-Time Inspectors	11	10	11	11	11
Part-Time Inspectors	102	102	190	192	238

**Exhibit 13**

**As of: 12/31/88**



# Explosions Aboard Aircraft Six Year Summary 1983-1988

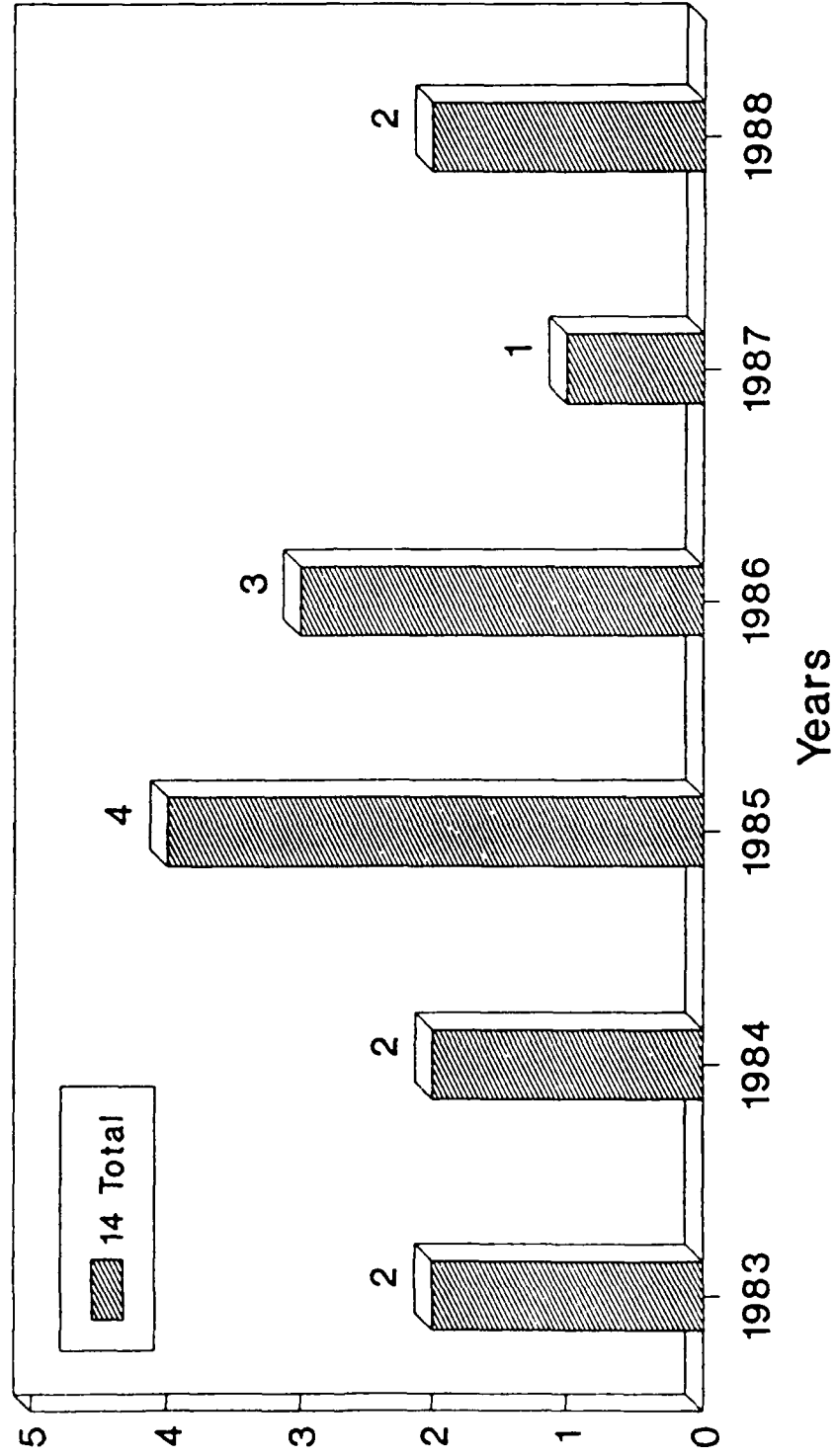


Exhibit 14

As of: 12-31-88

# *Casualties Caused by Explosions Aboard Air Carrier Aircraft 1984-1988*

